

REMARKS

Appreciation is expressed for the Examiner's withdrawal of the provisional rejection of claims 1-12 and 15-18 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Applications Ser. No. 10/910,183, 10/983,870 or 10/910,113 in view of Fisher '607.

Claims 1-12 and 15-18 therefore remain pending, claims 13-14 having been withdrawn as being directed to a non-elected invention. These claims are set forth hereinabove.

Claims 1-12 and 15-18 were rejected under 35 USC 103(a) as being unpatentable over US Patent 6,106,607 to Be in view of US Patent 6,187,697 to Jaffee.

Be is directed to a water repellant composition for gypsum containing masonry materials. The composition contains an organohydrogensiloxane and polyvinyl alcohol said to provide high water repellency. Jaffe provides multiple layer, nonwoven fibrous mats with a body portion layer and a surface layer portion.

The Be reference admittedly discloses gypsum board in which glass fibers are provided by introducing them into a slurry used to deliver the gypsum. Acknowledging that Be fails to disclose or suggest the inclusion of particles, as required by claims 1-12, the Examiner has further applied Jaffee. Pointing to col. 1, lines 5-25; col. 2, lines 20-30 and lines 60-67; and col. 5, lines 5-67, the Examiner has asserted that Jaffee discloses inclusion of

particles in the process of treating glass fibers prior to use in gypsum boards. It is alleged that it would have been obvious to one having ordinary skill in the art to add particles to the Be composition as suggested by Jaffee since such would improve processability and mechanical properties of the gypsum board.

It is settled law that to establish a prima facie case of obviousness, evidence must be adduced to satisfy all of the following criteria:

- There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references;
- There must be a reasonable expectation of success; and
- The prior art must teach or suggest all of the claimed limitations.

In the present instance, it is respectfully submitted that such a burden has not been met. Applicants respectfully traverse both the Examiner's contention that the combination teaches or suggests all of the claimed features and the purported motivation for the combination.

More specifically, Jaffee et al. discloses use of particles, but never in terms of particles added to the core of a gypsum board. Instead, the particles are discussed only with reference to a non-woven mat used as the facer of the gypsum board. Even more importantly, the Jaffee et al. mat is a multi-layer mat, and particles are only disposed in the surface portion layer, and not in the body portion layer, which would be in contact with the gypsum core in the finished board. The Examiner's assertion is that Jaffee et al. teaches that it is known in the art to include particles in the process of treating glass fibers prior to use in gypsum boards. Such an indication, even if correct and even if combined with Be, is submitted to fall far short of disclosing or suggesting

applicants' claimed gypsum board, in which fibers coated with a silane composition and processed to provide a roughened surface having nano or micro particles bonded to the fibers is present within the gypsum matrix. Any particles disclosed by Jaffee et al. are, at best, present solely in the outside surface of the facers of the gypsum board.

Applicants further submit that nothing in Jaffee et al. discloses or suggests that the particles used are micro or nano particles, as delineated by feature (f) of claim 1 and feature (e) of claim 7. Instead, Jaffee et al. teaches the use of much larger particles. Attention is respectfully drawn to col. 2, lines 32-36, at which Jaffee et al. states that "Particles, when used in the surface portion according to this invention, are preferably sized so that less than a few percent, preferably less than one wt. percent of the particles will pass through the openings between the fibers in the nonwoven mat." (Emphasis added.) A preferred range of particle size is said to be within the range of minus 40 and plus 100 US standard mesh. These mesh sizes correspond to sieve openings of 0.354 and 0.149 mm. It is respectfully submitted that a person having ordinary skill in the art would not understand particles specified by such mesh sizes as being micro or nano particles, as those terms are used by applicants. Such particles are generally said to have diameters in the range of about 5 nm to 10  $\mu$ m (page 13, lines 34-35).

Consequently, applicants submit that the Examiner has not established any motivation for the substantial reconstruction of Jaffee et al. that would be entailed in selecting particles of the markedly different size required by applicants' claims and in disposing such particles on the surface of glass reinforcing fibers in the gypsum matrix, and not in the surface-most portion of

facing sheets for the gypsum board. Even in combination with Be, no such motivation is provided, since Be contains no disclosure or suggestion of particles whatsoever.

The Examiner has indicated that addition of particles would improve processability and mechanical properties of the claimed gypsum board. However, no teaching in the prior art is adduced to support these assertions. Such a claim is submitted to be a mere restatement of the surprising and unexpected benefit of improved gypsum board mechanical properties that is derived only by impermissible hindsight reconstruction based on applicants' own teaching. Furthermore, addition of particles clearly adds additional complication to any gypsum board process, so that a person of ordinary skill in the art would be led away from the added complexity without some reasonable expectation of benefit to be gained thereby.

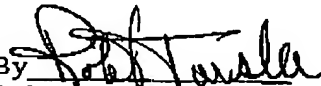
For these reasons, it is submitted that the combination of Be and Jaffee does not disclose or suggest the gypsum board recited by present claims 1-12 and 15-18.

Accordingly, reconsideration of the rejection of claims 1-12 and 15-18 under 35 U.S.C. 103(a) as being obvious over the combination of Be and Jaffee is respectfully requested.

CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that the present application is in allowable condition. Reconsideration of the rejection of claims 1-12 and 15-18 and allowance of the present application are earnestly solicited.

Respectfully submitted,  
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